Final Draft Proposal

Campus Connect - A Unified Market Place

For Students

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1. <u>Introduction</u>

Many students currently rely on external platforms like Facebook Marketplace, Craigslist,Amazon, or various group chats to buy and sell items or exchange study materials. This fragmentation leads to inefficiencies and inconvenience, making it difficult to find relevant items, reliable sellers, and the student-specific need for customers. Similarly, Students discard or store unused items (e.g., textbooks, furniture) while others struggle to find affordable options, and study materials are often recreated redundantly instead of being shared.

The objective of our project is to develop Campus Connect, a unified platform designed to streamline student transactions by integrating a campus marketplace, a peer-to-peer study material exchange, and an interactive networking space. Students must log-in with their student emails, making it exclusive to students. The platform will include broader categorization like textbooks, clothes, electronics and dorm supplies, providing a One-Stop solution for academic, office and lifestyle supply needs.

2. <u>Background and Problem Statement</u>

2.1 Current Challenges for Students

Students face many challenges when buying, selling, or exchanging goods and study materials / books:

1. **Fragmented Platforms** – Students use multiple platforms (Facebook MarketPlace, Craigslist, Chegg) for different needs, leading to inefficiency and additional costs.

2. **Lack of Trust and Verification** – Public marketplaces do not verify student status, increasing the risk of scams.

3. **Redundancy and Waste** – Many students discard or store unused items (textbooks, furniture) while others struggle to find affordable options.

4. **Inefficient Study Material Exchange** – Students often recreate notes or pay for resources that could be shared peer-to-peer.(Claremont, 2022)

2.2 Deeper Analysis of Existing Solutions

We dig a closer look into existing platforms similar to our project idea, and determined their positives and negatives. We also decided which features from alternative platforms we could implement into our product.

1) **Facebook Marketplace**

   Positives:

   - Massive user base - higher chance of finding the right product
   - Simpler user interface - easy to post listings and filter for products

   Negatives:

   - There is no student verification process - it increases risk of scams
   - Not academic-focused - It's focus is general marketplace, so products are not tailored to student needs
   - No filter to student needs - Filters for textbooks and courses are not available

   Campus Connect's Edge:

   - We will verify for student email accounts (.edu)
   - Dedicated study materials section for students

2) **Chegg / Course Hero**

   Positives:

   - Academic-focused, can search for notes and textbooks
   - Q&A sections that allows discussion for assignments and problem sets

Negatives:

- Expensive to access (15$ - 30$ / month)

- Students cannot sell or exchange their resources

Campus Connect's Edge:

- Allows free exchange if both parties agree

- Offers product listings besides academic resources

3) **Craigslist**

Positives:

- Offers fast, in-person pickups, specifically for dorm supplies

- No additional fees - seller gets all the profit

Negatives:

- No user verification - higher risk of scams

- Outdated user interface - makes it harder to spot fake listings (Hudson,2019)

Campus Connect's Edge:

- Simple and easy to understand user interface

- Allows faster trades and exchange, as students are on same campus

4) **Ebay / Amazon**

Positives:

- Powerful search filters (price ranges, categories, item condition)

- Secure payments - uses Escrow system that protect buyers and sellers (Amazon Web Services, n.d)

Negatives:

- High fees - Ebay takes 10-15% per sale

- Some used goods have shipping delays

Campus Connect's Edge:

- No seller fees

- Faster trades as students are on same campus

Key Takeaways from Similar Products:

After research, we decided to implement following features and ideas:

- **Facebooks ease of use** - Students can upload product listings, sell or trade items all in one place

- **Chegg's academic structure** - Search for academic materials / notes by course
- **Craigslist's local focus** - Buyers and sellers can agree on campus pick zones for exchange
- **Amazon's search filters** - Filter for product type, price, conditions …etc

2.3 How Campus Connect Improves Upon Existing Solutions

Campus Connect implements unique features to address these limitations:

✅ **Campus-Specific Verification** – Only enrolled students can join, ensuring trust and safety of students.

✅ **Unified Marketplace** – Combines physical goods and academic resources, enabling efficient browsing.

✅ **Sustainable & Affordable** – Encourages reuse of textbooks and furniture, reducing student costs.

✅ **Secure Transactions** – Enables peer-to-peer communication prior exchange and user reviews for safer transactions.

3. Technical Discussion

3.1 Core requirements:

- **User Authentication & Profile Management**: Secure login with student verification to ensure that only members of the campus community can register and login.
- **Product Listings & Management**: Users can create, edit, and delete listings for products they want to sell or trade.
- **Study Material Exchange**: A dedicated section where students can share notes, past exams, and study guides.
- **Search and Filtering Capabilities**: Users can search for items or materials based on categories, price range, or keywords.
- **Messaging System**: In-app messaging to facilitate communication between buyers and sellers.
- **Trust and Safety Features**: Ratings and reviews for users and products
- **Payment processing and shipping:** Integration of secure payment methods and choosing preferred shipping options (*An Example Sample Project Proposal on "E-Commerce Marketplace for Local Artisans and Small-Scale Businesses" - FundsforNGOs - Grants and Resources for Sustainability*, 2024)

3.1.1 Implementation

Frameworks & APIs we are planning to use:

Feature	Implementation
User Registration & Login	JWT auth+ Email verification
Product Listings Management	MongoDB
Study Material upload/download	File Storage AWS
Real-Time Chatting system	Websocket (Socket.io)
Search & Filtering	Custom query or Elastic Search
Payment processing	Paypal or Stripe APIs

3.2 System Architecture

Campus Connect follows a **full-stack web application** model with:

Frontend (Client-Side)
- **Technologies**: React.js, HTML, TailWind CSS, JavaScript
- **Key Features**:
  - Responsive UI for desktop and mobile
  - Interactive product listings with image galleries
  - Search filters (price, category, condition)
  - Shopping cart and checkout simulation
  - User review and rating system

Backend (Server-Side)
- **Technologies**: Node.js, Express.js
- **Database**:
  - **MySQL** (for structured data: user accounts, product listings, orders)
  - **MongoDB** (for unstructured data: chats, study materials)
- **APIs**: RESTful endpoints for user auth, product management, order processing

Authentication & Security
- **JWT (JSON Web Tokens)** for secure login
- **Student Email Verification** (.edu domain or university authentication) (*How to Write a Web Development Proposal – Cakedesk*, 2025)

4. User Stories

As a buyer:
- **Buy Items:**
  - As a buyer, I want to see high-quality product images and detailed descriptions to understand the item before purchasing.
- **Access Study Materials:**
  - As a buyer, I want to securely add items to my cart and proceed to checkout with a simple and clear payment process
- **Find reliable sellers:**
  - As a buyer, I want to use search filters (price range, brand, size) to narrow down results and find items that match my needs.
- **User reviews:**
  - "As a buyer, I want to track the status of my order from the time it is placed until delivery."

<u>As a Seller:</u>

- **Sell Items:**
    - "As a seller, I want to create detailed product listings with multiple images, accurate descriptions, and relevant categories."
- **Manage product listings:**
    - "As a seller, I want to manage my active listings, including the ability to quickly edit details, update pricing, and re-list items as needed.
- **Communicate with Buyers:**
    - As a seller, I want to communicate with potential buyers to negotiate prices or arrange meetups for item exchange.
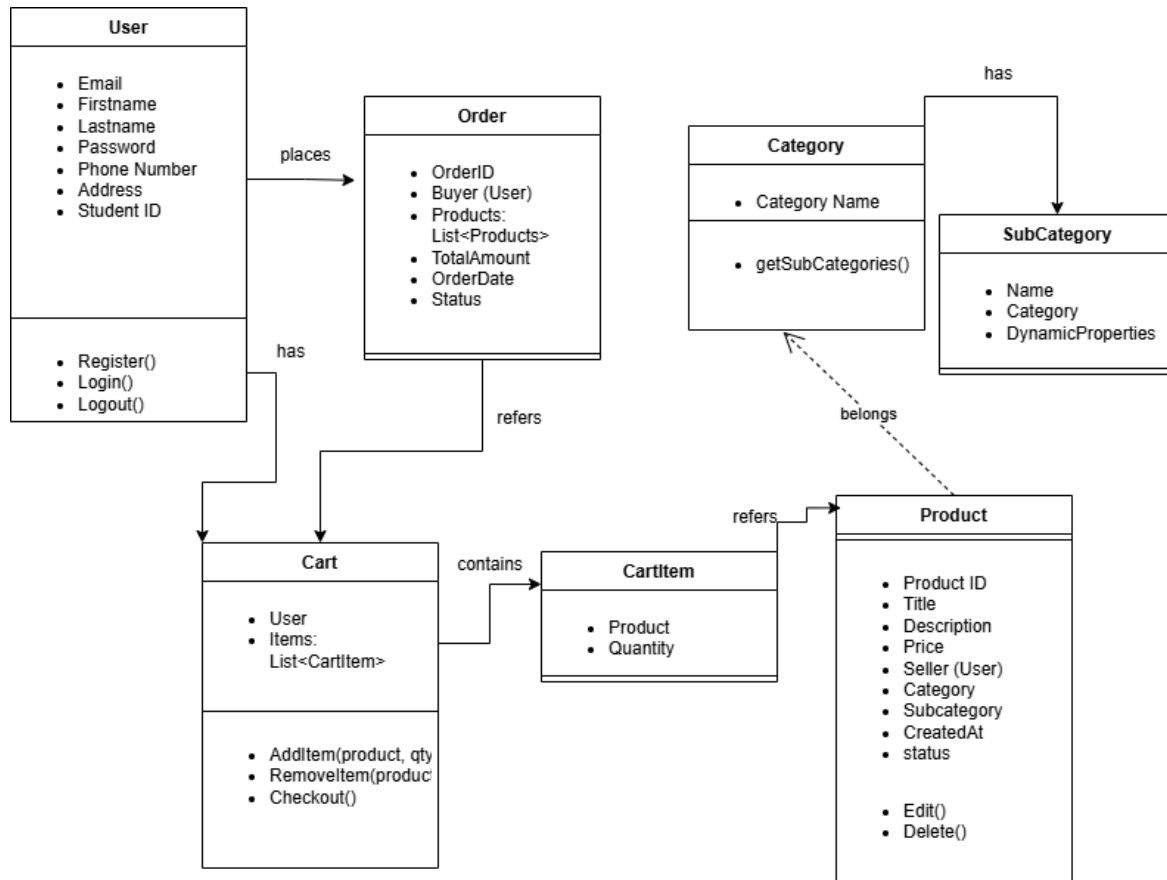
<u>As a general user:</u>

1. **Verify Student Status:**
    - As a user, I want to verify my student status so that I can ensure I'm transacting with other verified students.
2. **Rate and Review:**
    - As a user, I want to rate and review sellers, study materials, and exchange experience.
3. **Account registration and login:**
    - As a new or existing user, I want to create a new account and login using secure methods.

Use-Case example:

A student finishing their physics course wants to sell their textbook and a scientific calculator. They log into the CampusConnect, list their items under "Academic Materials" and "Electronics & Gadgets," add a course code, description, price, and preferred communication method. Another student currently enrolled in that course finds the listing, messages the seller through the built-in chat, and they arrange to meet on campus to exchange the items.
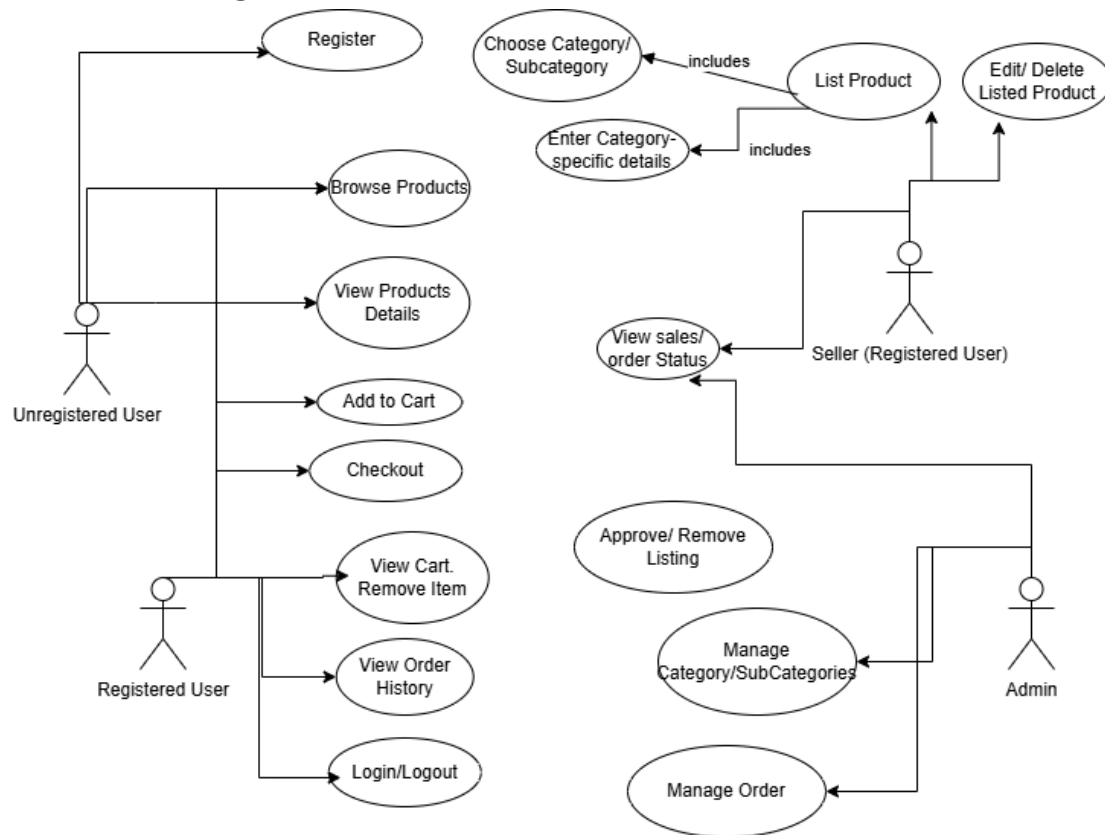
5. UML Diagram

Class Diagram:

1) User places an Order.
2) Orders placed by user refers to Cart.
3) Each user has their own Cart.
4) Each Cart contains CartItem.
5) CartItems refer to Products.
6) Each Product belongs to Category and Subcategory.

Use-Case Diagram

1) Unregistered users can register, browse products, view product details.
2) Registered users can do all activities an unregistered user does, but also add to cart, checkout, view cart and order history, and login or logout.
3) Sellers and list and edit their product, see order status.
4) Admins view sales and order status, approve and remove listing, manage categories and subcategories, and manage orders.

6. Deadlines and Milestones (For Fall 2025)
- **Week 1-3 : Planning and Setup**
  - Finalize requirements and user stories
- **Week 4-9 : Frontend and Backend development**
  - User authentication, database schema, File upload, GUI
- **Week 10-12 : Testing and improve using feedbacks**
  - Usability testing, messaging between students, and discuss with professor for progress and refine features.
- **Week 13-15: Final preparations, deployment**
  - Prepare for demos, presentation slides, documentation

7. Summary

Our project, Campus Connect, addresses common problems students face when buying, selling, or sharing items and study materials. Currently, students must rely on different platforms like Facebook Marketplace, Craigslist, Chegg, or Amazon, each with its own limitations such as lack of student verification, high fees, or inconvenient shipping.

Our Campus Connect project provides one easy-to-use platform tailored to verified students using their school email addresses. It combines features like quick product searches, secure messaging between buyers and sellers, and a dedicated section for sharing class notes and textbooks. The main goal is to create a safe, efficient, and convenient marketplace that saves money, reduces waste, and helps students easily find what they need.

We'll build the platform using technologies React.js, Node.js, MongoDB, and MySQL. It will also include secure payments and messaging tools. The development process will take place over the fall semester, with careful testing to ensure it meets student needs. Overall, Campus Connect aims to make student life easier by centralizing and simplifying campus transactions.

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